CLAIMS

1. A video coder for predictive coding a video stream of subsequent frames according to motion compensation into an encoded video bit stream, comprising:

- a frame buffer configured to store at least one reference frame of the video stream, said reference frame being different from a current frame of the video stream,

- an inter prediction unit configured to generate a prediction block of a current block of the current frame from a reference block of the reference frame, and

- an adaptive sharpening filter configured to adaptively filter the prediction block.

2. The video coder according to claim 1, comprising a control unit, wherein the adaptive sharpening filter is configured to be controlled by at least one adaptive parameter, wherein the adaptive parameter includes a sharpening strength coefficient, and

the control unit is configured to determine a parameter value of the adaptive parameter and supply the determined parameter value to the adaptive sharpening filter.

3. The video coder according to claim 2, wherein the control unit is configured to supply different parameter values for the adaptive parameter and to select one of the different parameter values based on a minimization of a residual block, said residual block being the difference between the current block and the prediction block, or based on a cost criterion such as, for example, a rate distortion optimization.

4. The video coder according to any one of the preceding claims, wherein the adaptive sharpening filter is a non-linear filter.

5. The video coder according to any one of the claims 2 to 4, wherein the adaptive sharpening filter comprises:

- an edge map calculation unit adapted to generate an edge map of a source block, said source block being the reference block or the prediction block,

- a blurring filter adapted to blur the edge map of the source block,

- a high-pass filter adapted to generate, by high-pass filtering the blurred edge map, a derivative vector (d2x, d2y) for each position of the source block,

- a scaling unit adapted to generate a displacement vector (wx, wy) by scaling the derivative vector (d2x, d2y) with a sharpening strength coefficient (k), and

- a warping unit adapted to warp the prediction block based on the displacement vector (wx, wy),

wherein the adaptive parameter includes the sharpening strength coefficient (k).

6. The video coder according to any one of the claims 2 to 5, comprising an encoding unit configured to generate the encoded video bit stream,

wherein the control unit is configured to transmit to the encoding unit adaptive parameter information about the determined parameter value, and

the encoding unit is configured to add the adaptive parameter information in the encoded video bit stream.

7. The video coder according to any one of the preceding claims, wherein the adaptive sharpening filter is always enabled.

8. The video coder according to any one of the claims 1 to 6, comprising a control unit configured to control at least one of a selective bypass of the adaptive sharpening filter and a selective application of the adaptive sharpening filter.

9. The video coder according to claim 8, wherein the control unit is configured to control the at least one of the selective bypass and the selective application based on a minimization of a residual block, said residual block being the difference between the current block and the prediction block, or based on another cost criterion such as, for example, another rate distortion optimization.

10. The video coder according to claim 8 or 9, comprising an encoding unit configured to generate the encoded video bit stream,

wherein the control unit is configured to transmit to the encoding unit sharpening filter information reflecting the at least one of the selective bypass and the selective application, and

the encoding unit is configured to add the sharpening filter information in the encoded video bit stream.

11. The video coder according to claim 6 or 10, wherein the adaptive parameter information or the sharpening filter information is added at a block level for each prediction block, for an arbitrary or regular region of the frame, at a frame level, at a GOP (group of pictures) level, at a PPS (picture parameter set) level or at an SPS (sequence parameter set) level.

12. The video coder according to any of the proceeding claims, wherein the adaptive sharpening filter is configured to be controlled by a single adaptive parameter.

13. A method for predictive coding a video stream of subsequent frames according to motion compensation into an encoded video bit stream, comprising:

- storing at least one reference frame of the video stream, said reference frame being different from a current frame of the video stream,
- generating a prediction block of a current block of the current frame from a reference block of the reference frame, and
- adaptively sharpening filtering the prediction block.

14. A video decoder for decoding an encoded video bit stream obtained by predictive coding a video stream of subsequent frames according to motion compensation, comprising:

- a frame buffer configured to store at least one reference frame obtained from the encoded video bit stream, said reference frame being different from a current frame of the encoded video bit stream,
- an inter prediction unit configured to generate a prediction block of a current block of the current frame from a reference block of the reference frame, and
- an adaptive sharpening filter configured to adaptively filter the prediction block.

15. The video decoder according to claim 14, comprising a control unit,

wherein the adaptive sharpening filter is configured to be controlled by at least one adaptive parameter, wherein the adaptive parameter includes a sharpening strength coefficient, and

the control unit is configured to determine a parameter value of the adaptive parameter and to supply the determined parameter value to the adaptive sharpening filter.

16. The video decoder according to claim 15,

wherein the control unit is configured to determine the parameter value of the adaptive parameter depending on adaptive parameter information obtained from the encoded video bit stream.

17. The video decoder according to claim 15 or 16,

wherein the control unit is configured to control at least one of a selective bypass of the adaptive sharpening filter and a selective application of the adaptive sharpening filter.

18. The video decoder according to claim 17,

wherein the control unit is configured to control the at least one of the selective bypass and the selective application based on sharpening filter information obtained from the encoded video bit stream.

19. A method for decoding an encoded video bit stream obtained by predictive coding a video stream of subsequent frames according to motion compensation, the method comprising:

- storing at least one reference frame obtained from the encoded video bit stream, said reference frame being different from a current frame of the encoded video bit stream,

- generating a prediction block of a current block of the current frame from a reference block of the reference frame, and

adaptively sharpening filtering the prediction block.

20. A computer program having a program code for performing the method according to claim 13 or 19, when the computer program runs on a computing device.